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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[Docket No. 160719634-6838-01]

RIN 0648–XE756

Listing Endangered or Threatened Species; 90-day Finding on a Petition To List the Pacific Bluefin Tuna as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: 90-day petition finding, request for information, and initiation of status review.

SUMMARY: We, NMFS, announce a 90-day finding on a petition to list the Pacific bluefin tuna (*Thunnus orientalis*) as a threatened or endangered species under the Endangered Species Act (ESA) and to designate critical habitat concurrently with the listing. We find that the petition presents substantial scientific information indicating the petitioned action may be warranted. We will conduct a status review of the Pacific bluefin tuna to determine whether the petitioned action is warranted. To ensure that the status review is comprehensive, we are soliciting scientific and commercial information pertaining to this species.

DATES: Scientific and commercial information pertinent to the petitioned action must be received by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE **FEDERAL REGISTER**].

ADDRESSES: You may submit comments on this document, identified by "Pacific Bluefin Tuna Petition (NOAA-NMFS-2016-0100)," by either of the following methods:

- Federal eRulemaking Portal. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0100*, click the "Comment Now" icon, complete the required fields, and enter or attach your comments.
- *Mail or hand-delivery*: Protected Resources Division, West Coast Region, NMFS, 1201 NE Lloyd Blvd., Suite #1100, Portland, OR 97232.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on http://*www.regulations.gov* without change. All personal identifying information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. We will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT: Electronic copies of the petition and other materials are available on the NMFS West Coast Region website at www.westcoast.fisheries.noaa.gov. Please direct other inquiries to Scott Rumsey, NMFS West Coast Region at scott.rumsey@noaa.gov, (503) 872-2791; or Marta Nammack, NMFS Office of Protected Resources at marta.nammack@noaa.gov, (301) 427-8469.

SUPPLEMENTARY INFORMATION:

Background

On June 20, 2016, we received a petition from the Center for Biological Diversity (CBD), on behalf of 13 other co-petitioners, to list the Pacific bluefin tuna as threatened or endangered under the ESA and to designate critical habitat concurrently with its listing. The petition includes general biological information about Pacific bluefin tuna including its taxonomy, range and distribution, the physical and biological characteristics of its habitat, population status and trends, and factors contributing to the species' decline. CBD contends that "Pacific bluefin tuna are severely overfished, and overfishing continues, making extinction a very real risk." The petitioner presents information in the petition on the abundance of the species relative to unfished levels and the fishing rates from 2011-2013 which "were up to three times higher than commonly used reference point for overfishing." The petitioner also presents information on the level of harvest of juvenile Pacific bluefin tuna and what it characterizes as a species in which "reproduction is currently supported by just a few adult age classes that will soon disappear due to old age." Copies of the petition are available upon request (see **FOR FURTHER INFORMATION CONTACT**).

ESA Statutory, Regulatory, Policy Provisions, and Evaluation Framework

Section 4(b)(3)(A) of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq*.), requires, to the maximum extent practicable, that within 90 days of receipt of a petition to list a species as threatened or endangered, the Secretary of Commerce make a finding on whether that petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, and to promptly publish such finding in the

Federal Register (16 U.S.C. 1533(b)(3)(A)). When it is found that substantial scientific or commercial information in a petition indicates the petitioned action may be warranted (a ''positive 90-day finding''), we are required to promptly commence a review of the status of the species concerned during which we will conduct a comprehensive review of the best available scientific and commercial information. In such cases, we conclude the review with a finding as to whether, in fact, the petitioned action is warranted within 12 months of receipt of the petition. Because the finding at the 12-month stage is based on a more thorough review of the available information, as compared to the narrow scope of review at the 90-day stage, a positive 90-day finding does not prejudge the outcome of the status review.

Under the ESA, a listing determination may address a species, which is defined to also include subspecies and, for any vertebrate species, any DPS that interbreeds when mature (16 U.S.C. 1532(16)). A joint NMFS–U.S. Fish and Wildlife Service (USFWS) (jointly, ''the Services'') policy clarifies the agencies' interpretation of the phrase ''distinct population segment'' for the purposes of listing, delisting, and reclassifying a species under the ESA (61 FR 4722; February 7, 1996). A species, subspecies, or DPS is ''endangered'' if it is in danger of extinction throughout all or a significant portion of its range, and ''threatened'' if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (ESA sections 3(6) and 3(20), respectively, 16 U.S.C. 1532(6) and (20)). Pursuant to the ESA and our implementing regulations, we determine whether species are threatened or endangered based on any one or a combination of the following five section 4(a)(1) factors: (A) the present or threatened destruction, modification, or curtailment of habitat or range; (B)

overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) inadequacy of existing regulatory mechanisms; and (E) any other natural or manmade factors affecting the species' existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)).

ESA-implementing regulations issued jointly by the Services (50 CFR 424.14(b)) define ''substantial information'' in the context of reviewing a petition to list, delist, or reclassify a species as the amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted. In evaluating whether substantial information is contained in a petition, the Secretary must consider whether the petition: (1) clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved; (2) contains detailed narrative justification for the recommended measure, describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species; (3) provides information regarding the status of the species over all or a significant portion of its range; and (4) is accompanied by the appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps (50 CFR 424.14(b)(2)).

At the 90-day finding stage, we evaluate the petitioners' request based upon the information in the petition including its references and the information readily available in our files. We do not conduct additional research, and we do not solicit information from parties outside the agency to help us in evaluating the petition. We will accept the petitioners' sources and characterizations of the information presented if they appear to

be based on accepted scientific principles, unless we have specific information in our files that indicates the petition's information is incorrect, unreliable, obsolete, or otherwise irrelevant to the requested action. Information that is susceptible to more than one interpretation or that is contradicted by other available information will not be dismissed at the 90-day finding stage, so long as it is reliable and a reasonable person would conclude it supports the petitioners' assertions. In other words, conclusive information indicating the species may meet the ESA's requirements for listing is not required to make a positive 90- day finding. We will not conclude that a lack of specific information alone necessitates a negative 90-day finding if a reasonable person would conclude that the unknown information itself suggests the species may be in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range.

To make a 90-day finding on a petition to list a species, we evaluate whether the petition presents substantial scientific or commercial information indicating the subject species may be either threatened or endangered, as defined by the ESA. First, we evaluate whether the information presented in the petition, along with the information readily available in our files, indicates that the petitioned entity constitutes a ''species'' eligible for listing under the ESA. Next, we evaluate whether the information indicates that the species faces an extinction risk that is cause for concern; this may be indicated in information expressly discussing the species' status and trends, or in information describing impacts and threats to the species. We evaluate any information on specific demographic factors pertinent to evaluating extinction risk for the species (e.g., population abundance and trends, productivity, population spatial structure and

connectivity, age structure, sex ratio, diversity, current and historical range), and the potential contribution of identified demographic risks to extinction risk for the species. We then evaluate the potential links between these demographic risks and the causative impacts and threats identified in section 4(a)(1).

Information presented on impacts or threats should be specific to the species and should reasonably suggest that one or more of these factors may be operative threats that act or have acted on the species to the point that it may warrant protection under the ESA. Broad statements about generalized threats to the species, or identification of factors that could negatively impact a species, do not constitute substantial information indicating that listing may be warranted. We look for information indicating that not only is the particular species exposed to a factor, but that the species may be responding in a negative fashion. We then assess the potential significance of that negative response.

Many petitions identify risk classifications made by nongovernmental organizations, such as the International Union on the Conservation of Nature (IUCN), the American Fisheries Society, or NatureServe, as evidence of extinction risk for a species. Risk classifications by such organizations or made under other Federal or state statutes may be informative, but such classification alone will not alone provide sufficient basis for a positive 90-day finding under the ESA. For example, as explained by NatureServe, their assessments of a species' conservation status do ''not constitute a recommendation by NatureServe for listing under the U.S. Endangered Species Act'' because NatureServe assessments ''have different criteria, evidence requirements, purposes and taxonomic coverage than government lists of endangered and threatened species, and therefore these two types of lists should not be expected to coincide''

(http://www.natureserve.org/prodServices/pdf/NatureServeStatusAssessmentsListing-Dec%202008.pdf). Additionally, species classifications under IUCN and the ESA are not equivalent; data standards, criteria used to evaluate species, and treatment of uncertainty are not necessarily the same. Thus, when a petition cites such classifications, we will evaluate the source of information that the classification is based upon in light of the ESA's standards on extinction risk and threats discussed above.

Distribution and Life History of the Pacific Bluefin Tuna

Pacific bluefin tuna are a pelagic, highly migratory species occupying coastal and open ocean areas up to depths of 200 meters (m). They are primarily found in subtropical and temperate waters of the North Pacific Ocean, ranging from East Asia to the west coast of North America. In the western Pacific they are most abundant between Sakhalin Island and the Philippines, but have been reported as far south as Australia and New Zealand. In the central part of the Pacific Ocean, Pacific bluefin tuna have been caught in fisheries both north and south of the equator (Bayliff 1994). In the eastern Pacific, they have been documented from Alaska to South America, but they typically range from the southern tip of Baja California, Mexico, and Point Conception, California (Bayliff 1994).

Of the bony fishes, tuna are unique for their high metabolic rate and in their ability to maintain body temperatures several degrees higher than the surrounding water (Collette & Nauen 1983). The Atlantic and Pacific bluefin tuna were once considered to be subspecies of the Northern bluefin tuna, but are now considered separate species on the basis of genetic and morphological differences (Collette 1999). Pacific bluefin tuna are one of the cold-water group of tunas which have been able to extend their feeding ranges into the colder ocean waters of the temperate zone (Collette 1999).

Pacific bluefin tuna spawning occurs in two areas of the western Pacific. They spawn between the Philippines and the Ryukyu Islands in April, May, and June, and in Japanese coastal waters of the Sea of Japan in July and August (Schaefer 2001; Tanaka *et al.*, 2007). Pacific bluefin tuna are iteroparous spawners, meaning they may spawn more than once in their lifetime. They reach sexual maturity between the ages of 3 and 5, and can live to be at least 20 years old. Research indicates that fish spawning between Japan and the Philippines are primarily 5 year olds, while fish spawning in the Sea of Japan are mostly 3 year olds (ISC 2014).

Pacific bluefin tuna tend to migrate north along the Japanese and Korean coasts in the summer, and south in the winter (Inagake *et al.,* 2001; Itoh *et al.*, 2003; Yoon *et al.,* 2012). A variable but small portion of the age 1-3 Pacific bluefin tuna migrate eastward across the North Pacific Ocean each year, spending up to several years as juveniles off the coast of North America before returning to the western Pacific Ocean to spawn (Inagake *et al.,* 2001). The trans-Pacific migration is believed to take 1.5-2.0 months (Baumann *et al.,* 2015) and their migration route tends to be within the subtropical zone (Whitlock *et al.,* 2012). In the eastern Pacific they are found primarily off the coast of Mexico, California, and Oregon (Domeier *et al.,* 2005). While in the Eastern Pacific Ocean, Pacific bluefin tuna exhibit a seasonal pattern of northerly migrations in the summer and fall, returning to Baja California in the winter months (Kitagawa *et al.,,* 2007).

Pacific bluefin tuna fisheries in the eastern Pacific are managed by the Inter-American Tropical Tuna Commission (IATTC), and fisheries in the western and central Pacific are managed by the Western and Central Pacific Fisheries Commission

(WCPFC). Five countries harvest these fish but Japan catches the majority of Pacific bluefin tuna, followed by Mexico, the United States, Korea and Chinese Taipei (ISC 2014). Based on genetic information and spawning distribution, the Pacific bluefin tuna is managed as a single stock. Research surveys have caught larval, postlarval, and early juvenile Pacific bluefin tuna in the western Pacific Ocean, but not in the eastern Pacific Ocean, leading to the conclusion that there is a single stock of Pacific bluefin tuna in the North Pacific Ocean (IATTC 2014).

Analysis of Petition and Information Readily Available in NMFS Files

The petition contains information on the species, including the taxonomy, species description, geographic distribution, habitat, population status and trends, and factors contributing to the species' decline. According to the petition, four of the five causal factors in section 4(a)(1) of the ESA are adversely affecting the continued existence of the Pacific bluefin tuna: (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (D) inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence.

In the following sections, we evaluate the information provided in the petition, as well as other pertinent information readily available in our files, to determine if the petition presents substantial scientific or commercial information indicating that an endangered or threatened listing may be warranted as a result of any of the ESA section 4(a)(1) factors. If it does, then we will make a positive finding on the petition and conduct a review of the species range-wide. Below, we summarize the information presented in the petition and in our files on the status of the species and the ESA section

4(a)(1) factors that may be affecting the species' risk of extinction, and determine whether a reasonable person would conclude that an endangered or threatened listing may be warranted as a result of any of these factors.

Pacific Bluefin Tuna Status and Trends

The International Scientific Committee (ISC), the scientific body that informs the Northern Committee to the WCPFC, uses fishery-specific catch-and-effort data from Japanese and Taiwanese fisheries to derive estimates of abundance for Pacific bluefin tuna. The ISC models generate annual estimates of total biomass, spawning stock biomass, and recruitment for each year beginning with 1952. Although there have been fisheries for Pacific bluefin tuna since at least the beginning of the 20th century in the eastern Pacific Ocean, and for several centuries in the western Pacific Ocean, the data prior to 1952, especially from the western Pacific Ocean, are of relatively poor quality (ISC 2016). For this reason, abundance estimates for Pacific bluefin tuna begin with the 1952 fishing season.

The ISC uses an age-structured model, based on catch, size-composition, and catch-per-unit of effort data, to derive estimates of biomass. Catch of Pacific bluefin tuna is recorded as metric tons of fish and biomass is likewise expressed in metric tons. The ISC model indicates that although the total biomass fluctuated throughout the assessment period (1952 through 2014), it began to steadily decline in 1996, leveling off in 2010 (ISC 2016). During the stock assessment period, the total biomass reached a peak of 209,075 metric tons in 1960 and a low of 29,347 in 1983. The estimated total biomass of Pacific bluefin tuna for 2014 is 35,817 metric tons.

The petition and the information in our files indicate that the abundance of Pacific bluefin tuna which are old enough to spawn (spawning stock biomass) has diminished to just 2.6 percent of its unfished biomass and less than one-third of what it was 20 years ago (ISC 2016). The unfished spawning stock biomass can roughly be defined as the theoretical spawning stock biomass without fishing and assuming no environmental or density-dependent effects. The ISC estimated the spawning stock biomass for the year 2014 was 16,557 metric tons and the unfished biomass to be approximately 636,807.

The ISC also estimates the productivity to be relatively stable throughout the modeling period. Recruitment estimates for the most recent years can be highly uncertain due to limited information on the cohorts. However, the ISC (2016) estimated that recruitment in 2014 was relatively low and the average for the last 5 years appears to be below the long-term average. The petitioners assert that 97.6 percent of all Pacific bluefin tuna caught are between 0 and 2 years of age and that the population is supported by just a few adult age classes. The petitioners further assert that along with the dwindling number of adults, in 2014, the Pacific bluefin tuna population produced the second lowest number of juvenile fish since 1952.

Analysis of ESA Section 4(a)(1) Factors

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The petitioners contend that Pacific bluefin tuna are at risk of extinction throughout their range due to water pollution, marine debris, oil and gas development, wind energy development, and prey depletion. The petitioners assert that Pacific bluefin tuna habitat is threatened by pollution in the form of mercury, persistent organic

pollutants, plastics, radiation nuclides from Fukushima, oil spills, oil and gas development related waste products, and waste from aquaculture projects. The petitioners note that a recent study by Lowenstein *et al.,* (2010) found mercury levels of bluefin tuna samples collected from restaurants and supermarkets exceed those permitted by the U.S. Food and Drug Administration (2000), Health Canada (2007) and the European Commission (2008). Bluefin tuna samples in the cited study were from Atlantic, Pacific, and Southern bluefin tuna, with over half of the samples from Atlantic bluefin tuna. The petition concludes that because of the relatively high mercury content compared to other fish species, Pacific bluefin tuna are likely susceptible to physiological impacts.

Petitioners also raised concerns about persistent organic pollutants. Persistent organic pollutants are absorbed by organisms at the base of the food chain and accumulated in the fatty tissues of consumers, becoming more concentrated as they work their way up the food chain. This process is known as biomagnification and can pose risks to predators, like bluefin tuna, which are at the top of the food chain. The petitioners cite various examples of studies that have documented biomagnification in similar species and the risks to the health of the organism. As an example, studies of Atlantic bluefin tuna in the Mediterranean found unusually high levels of female proteins in males of the species (Storelli *et al.,* 2008). Researchers believe polychlorinated biphenyls and organochlorine pesticides can mimic endogenous hormones, disrupt reproductive functions and cause developmental abnormalities (such as intersexes) in fish (De Metrio *et al.,* 2003).

The petitioners also raise concerns about pollution from aquaculture projects, calling attention to a proposed project off the coast of San Diego, California. Waste from

aquaculture operations can include excess fish feed, dead fish, fish feces, and chemicals used to control disease and parasites (e.g. antibiotics and pesticides). Excessive fish feed, dead fish, and fish feces can lead to elevated levels of nitrogen and phosphorous which in turn can cause oxygen depletion and harmful algal blooms in nearby waters. The petitioners do not provide details about how the chemicals used in aquaculture may affect the health of Pacific bluefin tuna in the wild.

The petitioners assert that Pacific bluefin tuna may be susceptible to entanglement by marine debris and ingestion of plastic particles. Most of the reports of fish entangled in marine debris are from lost fishing gear (NOAA 2014). The petitioners note that because of the properties of plastic, small plastic pellets tend to accumulate persistent organic pollutants and contribute to the biomagnification of these pollutants in the pelagic food web.

Oil and gas development can affect water quality through acute and chronic spills and discharge of produced water and drilling muds. The petitioners assert that the direct impacts of oil spills include behavioral alteration, suppressed growth, induced or inhibited enzyme systems and other molecular effects, physiological responses, reduced immunity to disease and parasites, histopathological lesions and other cellular effects, tainted flesh, and mortality (Holdway 2002). The petitioners further assert that oil spills can exert indirect effects on wildlife through reduction of key prey species, impacting wildlife species and ecosystems for decades (Peterson *et al.*, 2003). The petitioners assert that produced water and drilling muds contain toxic pollutants such as mercury, lead, chromium, barium, arsenic, cadmium, and polycyclic aromatic hydrocarbons (MMS 2007). Furthermore, the petitioners note that some of the chemicals added to fracking

fluids can have adverse effects on aquatic species and other wildlife (Colborn *et al.*, 2011). In addition to water quality concerns, the petitioner asserts that oil and gas exploration and development activities produce underwater noise which degrades Pacific bluefin tuna habitat. These activities include seismic surveying, drilling, offshore structure emplacement, offshore structure removal, and production related activities, including ship and helicopter activity for providing supplies to the drilling rigs and platforms.

The petitioners briefly describe the potential harm from wind-energy development, citing interference with migration, feeding, and collisions or entanglements during construction and operation as the primary issues.

The final issue raised by the petitioners related to Pacific bluefin tuna habitat is prey depletion. The petitioners assert that commercial fisheries for forage fish and squid have diminished the quality of Pacific bluefin tuna habitat in the California Current Large Marine Ecosystem. The petitioners further note that the fishery for market squid has increased five-fold in the last three decades (Vojkovich 1998; CDFW 2014) and the fishery for sardines was recently closed because of a 91 percent decline in abundance since 2007 (Hill *et al.*,, 2015). Research results on Pacific bluefin tuna foraging ecology demonstrate that their diet varies across years (PFMC 2016).

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petitioners assert that the primary threat to the Pacific bluefin tuna is from overutilization by commercial and recreational fisheries. A common practice in fisheries management is to define biological reference points for abundance of adult fish and limit harvest levels to maintain the stock at or above the biological reference points. The

fisheries commissions have not established biological reference points for Pacific bluefin tuna. However, the ISC compared the 2011-2013 estimated fisheries mortalities to standard reference points (targets for fishing effort and abundance of the population) and found that if those points were used to manage Pacific bluefin tuna, overfishing would be occurring or just at the threshold and the stock would be considered overfished (ISC 2016). The management implications of the most recent stock assessment are that the stock is at very low levels and the fishing mortality is higher than any reasonable reference point (Maunder 2016).

The petitioners assert that the vast majority of the Pacific bluefin tuna catch are juvenile fish and the population is supported by a dwindling number of adult tuna. According to the petitioners, nearly 98 percent of all Pacific bluefin tuna caught are between 0 and 2 years of age and the population is supported by just a few adult age classes. Furthermore, the majority of Pacific bluefin tuna landed in the Western Pacific are juveniles caught in or around their nursery grounds. In the Eastern Pacific, 90 percent of the catch is estimated to be 1 to 3 years of age (IATTC 2014).

The petitioners also assert that industrial fishing fleets are targeting adult Pacific bluefin on their spawning grounds, and that this is widely recognized as an unsustainable practice. In support of this assertion, the petitioners provide information about fisheries management for Atlantic bluefin tuna. The International Commission for the Conservation of Atlantic Tunas established regulations in 1982 which prohibit directed fishing on bluefin tuna in their Gulf of Mexico spawning grounds.

The petitioners assert that along with the dwindling number of adults, in 2014, the Pacific bluefin tuna population produced the second lowest number of juvenile fish since

1952. The ISC (2016) estimated that recruitment in 2014 was relatively low and the average for the last 5 years appears to be below the long-term average. Two out of the last three recruitments are the lowest levels observed since 1980 (Maunder 2016).

Inadequacy of Existing Regulatory Mechanisms

The petitioners assert that the existing international, regional, and national regulations do not adequately protect the Pacific bluefin tuna. The regional fisheries management organizations, the IATTC and the WCPFC have adopted management measures for Pacific bluefin tuna, but these measures may not be adequate to end overfishing. The petitioner's primary concern with the existing regulatory mechanisms is the absence of science-based biological reference points and a mandatory limit on the aggregate international catch of Pacific bluefin tuna. As noted above, the petitioners contend that Pacific bluefin tuna are at or below what should be considered a threshold for overfished.

The IATTC staff recommended that commercial catches in 2014 be limited to an amount below 3,154 metric tons, which was the estimated commercial catch in the Eastern Pacific in 2013, and that the noncommercial catches in 2014 be limited below 221 metric tons, which is based on the same method that was applied to commercial catch to determine that recommended limit (IATTC 2014a). The petitioners note that instead of using common scientific reference points, the IATTC staff recommended catch limits based on the previous year's total catch. The petitioners also note that despite recommendations from staff, the IATTC decided to set total commercial catches for 2015 and 2016 at 6,600 metric tons, for an effective annual catch of 3,300 metric tons in each year.

In 2014, WCPFC adopted a rebuilding plan designed to rebuild the stock to the historical median of 42,592 metric tons within 10 years (WCPFC 2014a). Estimated catches of Pacific bluefin tuna were high from 1929 to 1940 with a peak catch of approximately 47,635 metric tons in 1935 (ISC 2014). However, the WCPFC uses the year 1952 as the first year in its calculations for the historical median. The petitioners argue that the chosen historical median equates to just 6.4 percent of the historical unfished level, well below the commonly recommended rebuilding target of 20-40 percent of unfished levels for species such as bluefin tuna (Restrepo *et al.*, 1998).

The petitioners assert that U.S. regulations for domestic Pacific bluefin tuna fisheries are not adequate to prevent extinction. They argue that the United States has not taken adequate steps to prevent overfishing and to rebuild Pacific bluefin tuna. The petitioners note that for the 2012 and 2013 fishing seasons, NMFS implemented IATTC recommendations for commercial fisheries capping Pacific bluefin tuna annual catch at 500 metric tons – an amount above any U.S. catches since 2000. The petitioners also note that the annual catch limit for 2015 and 2016, a combined limit of 600 metric tons for both years, is more than the U.S. commercial fleet has caught in any 2-year period since 2002.

Since 2010, U.S. recreational catch has been significantly higher than U.S. commercial catch in all but one year, and accounts for the majority of the U.S. landings. In recent years, NMFS reduced the bag limit for recreational fisheries from 10 to 2 fish per day. The petitioners argue that the bag limit does not provide an absolute limit on recreational catch because (1) the fishery is open access, meaning there is no limit on the number of fishermen who can participate in the fishery, and (2) there is no limit on the

number of trips each fisherman can take. Therefore, they feel the bag limits do not provide a reliable mechanism for limiting recreational catch and preventing overfishing.

Other Natural or Manmade Factors Affecting Its Continued Existence

The petition contends that climate change and its associated ocean impacts threaten the continued existence of Pacific bluefin tuna. Climate change is increasing ocean temperatures and surface ocean acidity, and decreasing dissolved oxygen levels. Water temperature is believed to be one of the factors which influence spawning success of Pacific bluefin tuna. The petitioners assert that climate change and its associated influence on the distribution of ocean temperatures may disrupt both migration and spawning success for Pacific bluefin tuna. The success of Pacific bluefin tuna spawning and hatching, as well as larval survival, are believed to be closely linked to water temperature. The petitioners note that Kimura *et al.* (2010) found the optimal temperature range for Pacific bluefin tuna larval survival to be 24 to 28 degrees Celsius, and an increase of just 3 degrees above this range to result in an immediate rise in mortality rate. The petitioners also assert that climate change may also reduce prey availability for Pacific bluefin tuna, noting that climate-associated ecosystem changes have reduced productivity in the last half-century in the California Current Large Marine Ecosystem (Black *et al.*, 2014).

The petitioners assert that although research on ocean acidification's direct effects on tuna is in its infancy, preliminary experiments hatching yellowfin tuna eggs in ocean water of varying pH, including current and predicted near future ocean pH (6.9, 7.3, 7.7, and 8.1), showed that decreasing pH (i.e., acidification) significantly increased hours until complete hatching (Bromhead *et al.*, 2013; Frommel *et al.*, 2016). The petitioners

also cite research on other species which indicate that decreasing pH can lead to loss of the senses of sight, smell, and touch in fishes.

The petitioners assert that climate change will decrease dissolved oxygen levels in the ocean and influence the range of suitable habitat for Pacific bluefin tuna. The petitioners also assert that scientists have already documented reduced oxygen levels in Pacific bluefin tuna habitat – in waters off Japan, and the California Current (Bograd *et al.*, 2008; Emerson *et al.*, 2004; McClatchie *et al.*, 2010).

Petition Finding

After reviewing the information contained in the petition, as well as information readily available in our files, and based on the above analysis, we conclude the petition presents substantial scientific information indicating the petitioned action of listing the Pacific bluefin tuna as threatened or endangered may be warranted. Therefore, in accordance with section 4(b)(3)(B) of the ESA and NMFS' implementing regulations (50 CFR 424.14(b)(2)), we will commence a status review of the species. During our status review, we will first determine whether the species is in danger of extinction (endangered) or likely to become so (threatened) throughout all or a significant portion of its range. Within 12 months of the receipt of the petition (June 20, 2017), we will make a finding as to whether listing the species as endangered or threatened is warranted as required by section 4(b)(3)(B) of the ESA.

Information Solicited

As a result of this 90-day finding, we commence a status review of the Pacific bluefin tuna to determine whether listing the species is warranted. To ensure that our review of Pacific bluefin tuna is informed by the best available scientific and commercial

information, we are opening a 60-day public comment period to solicit information to support our status review and 12-month finding.

Specifically, we request information regarding: (1) species abundance; (2) species productivity; (3) species distribution or population spatial structure; (4) patterns of phenotypic, genotypic, and life history diversity; (5) habitat conditions and associated limiting factors and threats; (6) ongoing or planned efforts to protect and restore the species and their habitats; (7) information on the adequacy of existing regulatory mechanisms, whether protections are being implemented and whether they are proving effective in conserving the species; (8) data concerning the status and trends of identified limiting factors or threats; (9) information on targeted harvest (commercial and recreational) and bycatch of the species; (10) other new information, data, or corrections including, but not limited to, taxonomic or nomenclatural changes and improved analytical methods for evaluating extinction risk; and (11) information concerning the impacts of environmental variability and climate change on survival, recruitment, distribution, and/or extinction risk..

In addition to the above requested information, we are interested in any information concerning protective efforts that have not yet been fully implemented or demonstrated effectiveness. Our consideration of conservation measures, regulatory mechanisms, and other protective efforts will be guided by the Services "Policy for Evaluation of Conservation Efforts When Making Listing Decisions" (PECE Policy; 68 FR 15100; March 28, 2003). The PECE Policy establishes criteria to ensure the consistent and adequate evaluation of formalized conservation efforts when making listing decisions under the ESA. This policy may also guide the development of

conservation efforts that sufficiently improve a species' status so as to make listing the species as threatened or endangered unnecessary. Under the PECE Policy the adequacy of conservation efforts is evaluated in terms of the certainty of their implementation, and the certainty of their effectiveness. Criteria for evaluating the certainty of implementation include whether: the necessary resources available; the necessary authority is in place; an agreement formalized (i.e., are regulatory and procedural mechanisms in place); there is a schedule for completion and evaluation; for voluntary measures, incentives to ensure necessary participation are in place; and there is agreement of all necessary parties to the measure or plan. Criteria for evaluating the certainty of effectiveness include whether the measure or plan: includes a clear description of the factors for decline to be addressed and how they will be reduced; establishes specific conservation objectives; identifies necessary steps to reduce threats; includes quantifiable performance measures for monitoring compliance and effectiveness; employs principles of adaptive management; and is certain to improve the species' status at the time of listing determination. We request that any information submitted with respect to conservation measures, regulatory mechanisms, or other protective efforts, that have yet to be implemented or show effectiveness, explicitly address the criteria in the PECE policy.

We request that all information be accompanied by: (1) supporting documentation such as maps, bibliographic references, or reprints of pertinent publications; and (2) the submitter's name, address, and any association, institution, or business that the person represents.

References Cited

The complete citations for the references used in this document can be obtained by contacting NMFS (See **FOR FURTHER INFORMATION CONTACT)** or on our Web page at: *www.westcoast.fisheries.noaa.gov*.

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16. U.S.C. 1531 *et seq.*).

Dated: September 29, 2016.

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